

REMARKS

Claims 1, 3-5, 16-19, 30 and 31 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by Japanese Patent Publication 01-204424 ("Takao"). The reasons for the rejection are stated at pages 2-3 of the Official Action. The rejection is traversed for the following reasons.

Claim 1 sets forth a reactor of the type having a first electrode for supporting a substrate, an opposed electrode, and means for producing a plasma therebetween, wherein the opposed electrode has one face exposed to the first electrode and an opposite face connected to an electrical source and a thermal sink, the opposed electrode including (a) an electrode plate composed of a substantially pure material and having a substantially uniform thickness and (b) a support frame composed of an electrically conductive material bonded to a back face of the plate, the support frame connected to the electrical source and thermal sink and a front face of the plate is substantially free from protuberances. The combination of features recited in Claim 1 is not disclosed by Takao.

It is well established that a claim is anticipated only if "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). See also MPEP §2131. However, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). That is, inherency may not be established by probabilities or possibilities. *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). See also MPEP §2112 wherein it is stated that the Examiner must provide a basis in fact and/or technical reasoning

to reasonably support a determination that allegedly inherent characteristics flows from the teachings of the applied prior art.

In the Official Action, it is alleged that Takao discloses an amorphous carbon electrode 7 "bonded" to a back face of aluminum frame 4. However, the Official Action does not identify any teaching in Takao that electrode 7 is "bonded" to frame 4. In Takao's drawings, it appears that part 12 overlies the exposed surface of electrode 7 and part 11 appears to cooperate with part 12 to position electrode 7 between part 12 and frame 4. As such, Takao clearly fails to anticipate the subject matter of Claim 1.

Claim 18 sets forth an electrode assembly comprising an electrode disk composed of a substantially pure material and having a substantially uniform thickness and a support ring bonded about the periphery of one face of the disk, leaving the other face substantially flat and free from protuberances, wherein the support ring is composed of an electrically and thermally conductive material. For the reasons discussed above, the combination of features recited in Claim 18 is not disclosed by Takao.

Claim 2 stands rejected under 35 U.S.C. §103(a) over Takao in view of U.S. Patent No. 4,340,462 ("Koch"). The reasons for the rejection are set forth on page 4 of the Official Action. The rejection is traversed on the basis that Claim 2 is patentable for at least the reasons that Claim 1 is patentable over Takao.

Claim 6 stands rejected under 35 U.S.C. §103(a) over Takao in view of published European Patent Application EP 346055A2 ("Okazaki"). The reasons for the rejection are set forth on page 4 of the Official Action. The rejection is traversed

on the basis that Claim 6 is patentable for at least the reasons that Claim 1 is patentable over Takao.

Claim 7 stands rejected under 35 U.S.C. §103(a) over Takao in view of published JP 61-243170 ("Shigeru"). The reasons for the rejection are set forth on page 5 of the Official Action. The rejection is traversed on the basis that Claim 7 is patentable for at least the reasons that Claim 1 is patentable over Takao.

Claims 8 and 9 stand rejected under 35 U.S.C. §103(a) over Takao. The reasons for the rejection are set forth on page 5 of the Official Action. The rejection is traversed on the basis that Claims 8 and 9 are patentable for at least the reasons that Claim 1 is patentable over Takao.

Claims 10-13 stand rejected under 35 U.S.C. §103(a) over Takao in view of JP 61-279672 ("Yamada"). The reasons for the rejection are set forth on pages 5-6 of the Official Action. The rejection is traversed on the basis that Claims 10-13 are patentable for at least the reasons that Claim 1 is patentable over Takao.

Claim 14 stands rejected under 35 U.S.C. §103(a) over Takao in view of Yamada and Shigeru. The reasons for the rejection are set forth on page 6 of the Official Action. The rejection is traversed on the basis that Claim 14 is patentable for at least the reasons that Claim 1 is patentable over Takao.

Claim 15 stands rejected under 35 U.S.C. §103(a) over Takao in view of Yamada and Shigeru. The reasons for the rejection are set forth on page 6 of the Official Action. The rejection is traversed on the basis that Claim 15 is patentable for at least the reasons that Claim 1 is patentable over Takao.

Claim 20 stands rejected under 35 U.S.C. §103(a) over Takao in view of Okazaki. The reasons for the rejection are set forth on page 7 of the Official Action.

The rejection is traversed on the basis that Claim 20 is patentable for at least the reasons that Claim 18 is patentable over Takao.

Claim 21 stands rejected under 35 U.S.C. §103(a) over Takao in view of Shigeru. The reasons for the rejection are set forth on page 7 of the Official Action. The rejection is traversed on the basis that Claim 21 is patentable for at least the reasons that Claim 18 is patentable over Takao.

Claims 22 and 23 stand rejected under 35 U.S.C. §103(a) over Takao. The reasons for the rejection are set forth on pages 7-8 of the Official Action. The rejection is traversed on the basis that Claims 22 and 23 are patentable for at least the reasons that Claim 18 is patentable over Takao.

Claims 24-27 stand rejected under 35 U.S.C. §103(a) over Takao in view of Yamada. The reasons for the rejection are set forth on page 8 of the Official Action. The rejection is traversed on the basis that Claims 24-27 are patentable for at least the reasons that Claim 18 is patentable over Takao.

Claim 28 stands rejected under 35 U.S.C. §103(a) over Takao in view of Yamada and Shigeru. The reasons for the rejection are set forth on page 8 of the Official Action. The rejection is traversed on the basis that Claim 28 is patentable for at least the reasons that Claim 18 is patentable over Takao.

Claim 29 stands rejected under 35 U.S.C. §103(a) over Takao in view of Yamada and Shigeru. The reasons for the rejection are set forth on page 9 of the Official Action. The rejection is traversed on the basis that Claim 29 is patentable for at least the reasons that Claim 18 is patentable over Takao.

Claim 32 stands rejected under 35 U.S.C. §103(a) over Takao in view of Shigeru. The reasons for the rejection are set forth on page 9 of the Official Action.

The rejection is traversed on the basis that Claim 32 is patentable for at least the reasons that Claim 18 is patentable over Takao.

Claims 33-36 stand rejected under 35 U.S.C. §103(a) over Shigeru in view of Yamada. The reasons for the rejection are set forth on pages 9-10 of the Official Action. The rejection is traversed for the following reasons.

As set forth in *Dickinson v. Zurko*, 527 US 150, 50 USPQ2d 1930 (1999), tribunals of the USPTO are governed by the Administrative Procedure Act and BPAI decisions must be set aside if unsupported by substantial evidence. Accordingly, rejections under 35 U.S.C. §103 must be based on “evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness” *In re Lee*, 277 F3d 1338, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). A showing of a suggestion, teaching , or motivation to combine the prior art references is an essential component of an obviousness holding and “particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.” (Emphasis Added). *Id.* Conclusory statements regarding what is “basic knowledge” and “common sense” cannot be used to cure deficiencies of the cited references.

To avoid an impermissible hindsight reconstruction of the prior art, it is necessary “to consider the thinking of one of ordinary skill in the art at the time of the invention and guided only by the prior art references and then-accepted wisdom in the field” (Emphasis Added). *In re Kotzab*, F3d, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). The motivation, suggestion or teaching to modify the primary reference “may come explicitly from statements in the prior art, the knowledge of one of ordinary skill

in the art, or, in some cases the nature of the problem to be solved." *Kotzab*, 55 USPQ2d at 1317. However, while the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references, the test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. *Id.* To rely on an express or implicit showing, particular findings related thereto must be provided. *Id.* Conclusory statements are not evidence. In *Kotzab*, the court reversed the USPTO decision because "there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of *Kotzab*'s invention to make the combination in the manner claimed." *Kotzab*, 55 USPQ2d at 1318.

An obviousness determination under 35 U.S.C. § 103 requires consideration of the claimed invention "as a whole." *Ruiz v. A.B. Chance Co.*, 69 USPQ2d 1686, 1690 (Fed. Cir. 2004). As set forth in this case:

The 'as a whole' instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention. *Id.*

The discovery of a source of a problem is part of the "subject matter as a whole" inquiry of 35 U.S.C. § 103. *In re Sponnoble*, 160 USPQ 237, 243 (CCPA 1969); MPEP § 2141.02(III). The discovery of the source of a problem can provide

the basis of a patentable invention even though the remedy for the problem may be obvious once the source is identified. *Sponnoble*, 160 USPQ at 243. As set forth in *In re Shaffer*, 108 USPQ 326, 329 (CCPA 1956):

In fact, a person having the references before him who was not cognizant of appellant's disclosure would not be informed that the problem faced by appellant ever existed. Therefore, can it be said that these references which never recognized appellant's problem would have suggested its solution? We think not, and therefore feel that the references were improperly combined since there is no suggestion in either of the references that they can be combined to produce appellant's result. (Emphasis added).

In *In re Rinehart*, 189 USPQ 143, 148-49 (CCPA 1976), the court reversed the USPTO's finding of obviousness because the applied art failed to recognize, and thus did not suggest a solution to, the particular problem encountered by the inventor in scaling up a process disclosed by one of the applied references.

As set forth in *In re Rouffet*, 47 USPQ2d 1453, 1457-58 (Fed. Cir 1998):

To prevent use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. (Emphasis added).

In *Rouffet*, the court found that the USPTO failed to rely on the nature of the problem to be solved, the teachings of the prior art, or the knowledge of persons of ordinary skill in the art as a source of motivation to combine prior art references applied in a rejection under 35 U.S.C. § 103, and reversed the rejection. *Id.* at 1458.

The mere fact that a reference may be modified does not make the resultant modification obvious unless the art suggested the desirability of the modification. *In re Fritch*, 23 USPQ2d 1780, 1783-84, n. 14 (Fed. Cir. 1992); *In re Gordon*, 221

USPQ 1125, 1127 (Fed. Cir. 1984); *Kotzab*, 55 USPQ2d at 1316-17; MPEP § 2143.01(I). As explained below, the combination of features set forth in Claim 33 is not suggested by the applied references.

Claim 33 was amended via Preliminary Amendment to correct an obvious error set forth in line 6 (electrode plate should be supporting ring) and sets forth a method of forming an electrode assembly including a support ring and an electrode plate, the method comprising bonding the support ring about the periphery of the electrode plate at an elevated temperature, wherein the material of the supporting ring has a higher coefficient of thermal expansion than that of the electrode plate, and allowing the bonded assembly to return to room temperature, whereby the differential contraction imparts the desired stress. Claims 34-36 depend from Claim 33.

As explained at column 6, line 62 through column 7, line 12 of Applicants' U.S. Patent No. 5,074,456, support ring 14 can be formed of a material which has a slightly larger thermal expansion coefficient than that of the electrode plate to "pre-stress" the support ring to provide radially-inward compression on the electrode plate and bonding layer.

In the Official Action, Shigeru is cited for disclosure of bonding a backing plate to an electrode plate (silicon dioxide) at elevated temperature wherein the material of the backing plate (Cu) has a higher coefficient of thermal expansion than that of the silicon dioxide electrode plate whereby differential contraction allegedly imparts the desired stress (sentence bridging pages 9-10 of the Official Action). However, Shigeru states that a cooling system circulates water inside copper backing plate 103 when silicon dioxide plate 103 (the target material) is bonded to the copper

backing plate (see translation at page 2, lines 21-29 of Shigeru). Thus, there is no explicit disclosure of a "pre-stress" in Shigeru nor any basis to conclude that a pre-stress would be produced or desired in the Shigeru arrangement.

Yamada is cited for alleged disclosure of an electrode assembly with a support ring and electrode plate of substantially pure material and it is alleged in the Official Action that it would have been obvious to modify Shigeru to utilize a support ring and electrode plate to provide a sputtering apparatus that enables a high purity film formation (Official Action at page 10). However, the Official Action provides no reasoning as to why a person of ordinary skill in the art would have been motivated to substitute the support ring of Yamada for the water cooled backing plate of Shigeru. Such a modification of Shigeru would destroy the principle of operation of Shigeru's cooling arrangement. Given that Shigeru fails to disclose bonding an electrode to a backing plate to achieve a desired stress due to differential contraction and substitution of Yamada's support ring is contrary to the teachings of Shigeru, the method recited in Claim 33 is clearly not suggested by the combination of Shigeru and Yamada. Accordingly, Claim 33 and the claims dependent thereon are clearly patentable over the combination of Shigeru and Yamada.

#### IV. Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. Should the Examiner have any questions regarding this response, Applicants' undersigned representative can be reached at the telephone number given below.